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THE PARADOX OF THE THINKING BEHAVIORIST.

OUR gusty realms of philosophy and psychology are at present considerably agitated by the wind of doctrine known as behaviorism. Having grown rapidly from a working theory of psychological method to a kind of metaphysics, the behavioristic creed seems to be gaining acceptance in several quarters; and it has also lately been honored with a good deal of serious criticism. An entire session of last year's International Congress of Philosophy at Oxford was devoted to debate on a single phase of it. That and other recent discussions of the subject present many acute and searching comments on the theory; but none of those which I have happened to read seem to me to go quite to the root of the matter. There is, I think, a difficulty in behaviorism more fundamental and (as I should have supposed) more glaringly evident than any that, so far as I have observed, have hitherto been dwelt upon;¹ and it can be exhibited wholly from what may be called the inner point of view of behaviorism itself. All of the premises, in other words, of the criticism which I am about to set forth are premises which it would seem that the behaviorist accepts. I should hesitate to present considerations so obvious as those which follow, if it were not apparent that they have eluded many contemporaries.

The criticism has to do with the behavioristic account of perception and thought. In spite of the plain language usually employed by behaviorists, that account has sometimes been misunderstood. It is therefore necessary to begin with a brief summary of it, as it is set forth by its principal author and best qualified expounder, Dr. J. B. Watson. Thinking and perceiving, Watson tells us, are, like any other phenomena dealt with by psychology, to be defined entirely in terms of behavior; behavior means simply responses to stimuli; and by response

¹ The same difficulty was, however, briefly and insufficiently indicated by the present writer some years ago in "The Existence of Ideas," *Johns Hopkins University Circular*, 1914, No. 263, pp. 71-3.

the behaviorist means solely "the total striped and unstriped muscular and glandular changes which follow upon a given stimulus." The muscles primarily concerned in perceiving and in thinking are the same, *viz.*: "the laryngeal, tongue and speech muscles generally." In the case of perception the verbal response may be (though apparently it need not be) "overt," *i.e.*, it may consist in actual speech. Perceiving a thing, in short, is identical with the motion of the muscles involved in uttering its name. In thinking, however, and often, no doubt, in perception, the response is "implicit," *i.e.*, it is not actually observable as a muscular movement by the psychologist or, as a rule, by the subject. Arguing from the analogy of other processes—and also, it must be added, driven by the requirements of the general theory which he has embraced—the behaviorist "assumes" that when a man is said to be "merely thinking" his muscles "are really as active as when he is playing tennis." In either perception or thought the entire body is doubtless involved in some degree, as it is in all behavior; and in deaf and dumb persons, or those whose larynx has been removed, the usual functions of the laryngeal muscles are "usurped by the fingers, hands, arms, facial muscles, muscles of the head, etc." But in any case it is to some complex of movements of the muscles constituting, for the organism concerned, a language-mechanism, that those mysteries of the older psychology, perception and thought, are reduced.

It is, the behaviorist observes, characteristic of the adult human organism that by far the greater number of the stimuli which affect it evoke first this peculiar type of muscular response, either in the implicit or overt form. The response is of course, a habit acquired through the usual process of learning by trial and error. The implicit movements of the language mechanism sometimes, as in day-dreaming, run through a relatively self-contained course to a terminal stage of fatigue or satiety, and change of activity;¹ they sometimes, and doubt-

¹ Thus the behaviorist is not bound to maintain that the process to which he gives the name of 'thinking' is always 'practical,' in the sense that the implicit movements of the language mechanism always issue in overt and definite movements of adjustment. In other words, though pragmatists mani-

less usually and normally, release other muscular processes, which through habit have become associated with the first, and thus eventuate in more or less adaptive behavior of the grosser musculatures or of the body as a whole. When we are said to 'solve a problem by thinking,' we are merely going through a habit-acquired sequence of responses, which begins with implicit behavior of the language-mechanisms and ends in some relatively unobstructed form of overt behavior. Nothing happens from first to last but displacements of muscle-fibre (with, of course, the concomitant chemical and physical changes in the vascular, digestive, and glandular systems). The only difference, for the behaviorist, between the 'thinking' involved in, *e.g.*, forming what is commonly called a plan of action, and the activity by which the plan is carried out, lies in the position and extent of the groups of muscles, and in the magnitude of the movements, concerned in the two processes. It is not merely that certain muscles are the organs of thought; what the behaviorist maintains is that the minute changes of relative position of these muscles *are* 'thought,' and that beyond these nothing is to be observed in the human organism to which the term can be applied.

With this, of course, images and ideas, as well as 'mind,' 'consciousness,' and other familiar categories of the older psychology, are eliminated from the descriptive analysis of perception and thought. "I should throw out imagery altogether," writes Watson. "I believe we can write a psychology and never use the words consciousness, content, introspectively verifiable, imagery, and the like."¹ The researches of Angell and Fernald (aside from other considerations) "pave the way for the complete dismissal of the image from psychology."² And this does not mean that these things are merely to be excluded from consideration for reasons of methodological convenience;

lest a strong propensity to become behaviorists, it is not logically necessary for the behaviorist to be a pragmatist. He can, after a fashion, find a place in his scheme of things for 'pure thought,' *i.e.*, for 'implicit behavior' which is carried on for its own sake, and is not merely instrumental to the 'overt' variety.

¹ "Psychology as the Behaviorist views it," *Psychol. Rev.*, 1913, pp. 176, 166.

² *Behavior*, 1914, p. 18.

it means that we have no reason to believe in their existence, that they are not verifiable facts of experience. Those who "grope in a laboratory to discover the 'images' that the introspective psychologist talks about" will find nothing but processes in the larynx. "It is," Watson declares, "a serious misunderstanding of the behavioristic position to say," as one would-be expositor of it has said, "that of course a behaviorist does not deny that mental states exist. He merely prefers to ignore them." He ignores them, Watson explains, "in the same sense that chemistry ignores alchemy and astronomy ignores horoscopy. The behaviorist does not concern himself with them because, as the stream of his science broadens and deepens, such older concepts are sucked under never to reappear."¹

It is true that in some of his earlier statements of his position Watson sought to avoid facing the existential question. He refrained both from denial and from affirmation of the reality of purely psychic existences, and was content to argue that, if such an inner or mental world exists, it is not, at any rate, accessible to a strictly 'scientific' type of observation and experiment. But it was manifestly impossible for the behaviorist to remain at such a half-way house. His repudiation of the introspective method, the root of his entire doctrine, could not be justified, unless the belief in the existence of sensations, images, and the like, were definitely excluded. For if material of this sort, observable through introspection and through introspection alone, exists, the legitimacy, and even the necessity, of an introspective psychology cannot seriously be denied. If it is conceded that a certain defined type of phenomena is actual, and that it is accessible only through a special method of inquiry, it is certain that science cannot refuse to study those phenomena or to employ that method. The inquiry may be difficult, and the results hitherto attained by it unsatisfactory; but that, to the genuine man of science, is no reason for discontinuing the investigation. The thesis of the non-existence of images was, therefore, implicit in the behavioristic psychology from the first; and the later developments of the doctrine are entirely consistent in making it explicit.

¹ *British Jour. of Psychology*, Oct., 1920, p. 94.

Thus the behaviorist and his critics usually differ first of all upon a simple question of empirical fact. The critic asserts that a given kind of thing, commonly called an image, is actually found in his experience, is a directly observable datum; the behaviorist replies that the critic cannot have observed it, for there is nothing of the sort there to be observed. Now, if the issue turned wholly upon this disputed question of fact, it would be a logically embarrassing one to deal with. How argue from a fact, when the person whom you are seeking to convince denies that it is a fact? The behaviorist's attitude towards his critic is similar to that of the Christian Scientist. The latter meets the objection to his optimism drawn from the existence of pain by denying that pain is a reality. Doubtless in doing so he denies what others are certain that they have actually experienced; but he, for his part, is satisfied to hold that all the rest of mankind are mysteriously in error, perhaps through the agency of malicious animal magnetism. So Dr. Watson; if others protest that they have percepts or images, he simply tells them that they are mistaken, and renders this assurance more plausible to himself, if not to them, by assuming that their belief is due to religious or quasi-religious bias. "The motive," for example, behind a certain view of Wm. James's is, for Watson, "not difficult to find. It is the motive behind the resistance to the behaviorist's view of thought and its roots lie in mysticism and early religious trends."¹

Now, so long as the argument is limited to these dogmatic assertions and denials on the question of fact, no logical progress towards a conclusion is possible. Neither side can by such means either convince or confute the other. Some critics of behaviorism have, nevertheless, simply pitted their assertion of the existence of images against the behaviorist's denial. It is chiefly this method of argument that Mr. Bertrand Russell employs in his discussion of the behavioristic theory of thought in his *Analysis of Mind*. Mr. Russell seems, antecedently, favorably disposed towards behaviorism, and certainly cannot plausibly be charged with an antipathy to it due to religious

¹ *British Jour. of Psychol.*, Oct., 1920, p. 99.

prejudice. He incorporates some of its subsidiary doctrines in his restatement of his own psychological and epistemological position. But he declares that in denying the reality of images Watson "has been betrayed into denying plain fact in the interest of a theory." Professor Pear, likewise, in the discussion at the Oxford Congress of Philosophy, rested his case largely, though not wholly, upon the contention that "Watson has not adduced sufficient evidence to bring about the abandonment of the study of 'imagery' by 'introspection'"¹ Watson would doubtless reply that one does not, strictly speaking, "adduce evidence" of the non-existence or non-observableness of a thing, and that from his point of view the burden of proof rests wholly upon the other side.

Is there, then, no way of dealing with the issue except by appealing to conflicting reports of direct personal experience? Dr. Watson himself has indirectly suggested an obvious change of venue which the behaviorist would be willing to accept. "Since," he writes, "our assumed explanation [of the nature of 'thought'] is simple and straightforward and adequate to account for all the facts and is in line with what can actually be observed in other activities, the law of parsimony demands that the upholders of 'imagery' and 'imageless thought' should show the need of such 'processes' and demonstrate objectively their presence." The behaviorist, then, is open to a conviction of error, if a pertinent fact can be pointed out which his 'explanation' is not adequate to account for. Only, it must be a fact which he himself admits to be a fact, and not one which he denies. Now, such a fact can very easily be pointed out. It is the fact that the behavioristic psychologist himself exists. For a behavioristic psychologist (*a*) is a human organism, (*b*) whose perceiving and thinking, if his own theory is correct, should be exhaustively describable in terms of movements of his laryngeal and related muscles, but who (*c*) in fact thinks, or professes to think, of external objects and stimuli, that is, of entities outside his body, (*d*) which thinking is obviously

¹ *British Jour. of Psychol.*, Oct., 1920, p. 76.

neither describable as, nor 'accounted for' by, movements of his laryngeal or other muscles inside his body.¹

The simple fact to which I invite the behaviorist's attention is, I have said, one which he himself admits. He will certainly not deny that he 'observes,' and thinks of, things not contained within his own skin; he cannot take the first step in the formulation of his own account of the antecedents and determinants of bodily behavior without making this claim for himself. (He need not, it is true—in logical strictness—attribute a similar accomplishment to anyone else). Mr. Arthur Robinson has quite precisely characterized the procedure of behaviorism, when he says that "consciousness plays no part in it—*except the part it plays in relation to all science*, that is, external to and non-constitutive of its object—or, in other words, *it means the awareness of the investigator*."² But "investigators" happen to be among the "objects" to which the science of psychology relates; and the "awareness of the investigator," even of one investigator only, is sufficient to disprove the contention that no such phenomenon as awareness is to be found. And, of course, it is precisely to this that the behaviorist's contention comes. What he maintains, as we have seen, is that perceiving or thinking *is* a movement of certain muscles; that it is nothing more than this; and that no terms beyond those requisite for fully describing the movements of those muscles (with connected chemical changes) are needed in giving a complete account of what happens when perception or thought is going on. But, in fact, you obviously may describe muscular movements, *as* movements, to the *n*th degree of minuteness and you will have said no word suggesting that the organism in which they occur is also apprehending objects external to itself, and is aware of stimuli which are antecedent in time to the muscular processes which they excite. The behaviorist, then, asserts the identity of two things which are not

¹ Certain other arguments presented by Mr. A. S. Otis in *Psychol. Rev.*, Nov., 1920, and those advanced by Professor Calkins (*Psychol. Rev.*, Jan., 1921) also, as it seems to me, bring out conclusive objections to behaviorism; but it does not fall within the purpose of this paper to consider these other difficulties, which appear to me less fundamental.

² *Brit. Jour. of Psychol.*, Oct., 1920, p. 83; italics mine.

describable, and which he does not attempt to describe, in identical terms. He identifies thinking with a process which, by definition, does not do what thinking does—what, at any rate, his own thinking definitely claims to do. Thought constantly deals with the distant in space and with the remote in time; but the movements of the “language-mechanisms” in which the thought of a given moment is supposed to consist are strictly intra-corporeal and are limited to that moment. The behaviorist’s laryngeal muscles, when he is thinking of an object at the other end of his laboratory from which he is receiving visual or auditory stimuli, do not leap through space and lay hold upon the object; and if they did, it would make no difference. Nothing whatever, upon behavioristic principles, would have happened except the shifting of certain molecules from one spatial position to another; and there is nothing in the shifting of a set of molecules which in the least resembles what we mean—and what the behaviorist manifestly means—by a knowledge of the existence, or of the qualities, of bodies not identical with those molecules.

Though I have, to avoid confusing issues, thus far limited myself to pointing out the inconceivability of the apprehension of external objects, if the behaviorist’s description of thinking were accepted, it is, of course, equally true that he can profess a knowledge even of his own muscular movements, ‘overt’ or ‘implicit,’ only by claiming for himself a power which he at the same time denies to all organisms including himself. For the mere occurrence of a muscular contraction within my body is not equivalent to an awareness of that occurrence. Here, as before, we must say to the behaviorist: ‘You have but to look at the meaning of your own assertion to see that it contradicts the fact. Let your description of the muscle-contraction, strictly as such, be as exhaustive as you please, there would be in it nothing to indicate that, besides the spatial displacements of various fibres, there is also involved an awareness of that displacement.’ The awareness is always an additional fact; that it is so even the behaviorist of the strictest sect is constrained at times expressly to admit. For he is,

necessarily, unable to dispense with the distinction between muscular movements of which the subject is aware and those of which he is not aware—at least when the psychologist is himself the subject. I quote the whole of a remark of Watson's from which I have already cited a phrase: "I should throw out imagery altogether and attempt to show that practically [?] all natural thought goes on in terms of sensori-motor processes in the larynx, *which rarely come to consciousness in any person who has not groped for imagery in the psychological laboratory.*"¹ Yet, a few pages earlier in the same paper, Dr. Watson had proclaimed the possibility of writing a psychology "without ever using the word consciousness"! The use of it here is, however, no casual inadvertence; the entire distinction between 'overt' and 'implicit' behavior depends upon the assumption that there are some muscular processes of which somebody—either the subject or the observer—is conscious, and others of which neither is habitually or directly conscious, and which, therefore, can only be inferred by analogy.

The same distinction between the subject's muscular activity and his awareness or observation of that activity appears in Dr. Watson's contribution to the discussion at Oxford. Speaking of a certain series of experiments he says: "The subject himself could observe during the apparently immobile period that he used words and sentences (and that for a part of the time he did not know what he was using!)." Here we have a subject who simultaneously is doing two things; he is using words and sentences and he is also 'observing' that he is using them. The two processes are not identical, for one admittedly sometimes goes on without the other. Now what, from the behavioristic point of view—if the behaviorist would but adhere to it consistently—could this 'observing' conceivably be? Obviously only another simultaneous action of the language-mechanism. The subject would be (subvocally) forming two sequences of words and sentences at the same time, presumably with one and the same group of muscles—which I

¹ "Psychology as the Behaviorist Views It," *Psychol. Rev.*, 1913, p. 174; italics mine. The hesitant tone of a part of the sentence is characteristic of this early date in the history of behaviorism; it has now been abandoned.

should suppose to be a matter of some difficulty.¹ And if he is to be supposed capable of 'observing' also the second sequence, it would be necessary that still a third series of movements of the speech-mechanism should be going on; and so on. Meanwhile, none of these muscular movements, however many be assumed to be simultaneously occurring, would amount to an observation of anything; for the motion of a given bit of muscle in one direction cannot intelligibly be said to be an observing of another motion even of the same muscle at the same moment (supposing that possible) in another direction. It cannot even be properly said by a behaviorist that the secondary talking which he calls an 'observation' of the primary talking constitutes speech 'about' the primary talking. For the category of 'about,' the conception of 'reference to,' has no legitimate place in a behavioristic system. It is not a relation definable in physical terms; and all relations not definable in physical terms are (professedly) excluded from the behaviorist's universe. The talking in which he makes both thinking and the observation of it consist would not, in the ordinary sense, have any meaning. To talk does not signify for the behaviorist, so long as he adheres to his principles, to use words to express an awareness of something other than the words; it signifies, once more, nothing but the play of certain complexes of muscles, chiefly laryngeal. If then—to repeat—these muscular (and glandular) changes were all that ever happened in the life-history of a behavioristic psychologist, he would never know that anything of the sort *was* happening. For if a given event is defined as nothing more than an alteration of the position of certain pieces of organic matter, it is *eo ipso* defined as *not* containing or affording a knowledge even of itself, to say nothing of other things.

Of the possibility of the criticism which I have been here

¹ The deaf and dumb, and persons whose larynx had been removed, would be in a still more difficult situation. They could 'observe' one set of movements of their fingers only by simultaneously performing another set. Perhaps it will be suggested that the 'observation' may consist in a *subsequent* motion of the language-mechanism. But it is, if possible, still more unintelligible to speak of the muscular movement of a given moment as an 'observing' of another, no-longer-existent, movement.

presenting, *viz.*, that the behaviorist's logical procedure is vitiated by his failure to take account of himself, Dr. Watson is, it would seem, not wholly unaware; for he has more than once dwelt upon certain considerations which are probably regarded by him as a reply to this criticism. If, he remarks, you ask a physiologist or a physicist at the conclusion of an investigation, "'Did you realize that there was an observer implied during all your manipulations?'" he would probably not know what you meant, and he would certainly be mildly angered if you happened to interfere during his working moments with such a question. . . . He gets along without discussing or ever being interested in the fact that there is an implied observer at every moment in science, and that a thousand interesting metaphysical points lie behind an individual's ability to make observations. The behaviorist likewise shuts his eyes to the same metaphysical questions, and asks only to be allowed to make observations on what his subjects are doing under given stimulating conditions."¹ Even as a description of the procedure of the physical sciences this passage is clearly an overstatement; it would, I suspect, somewhat astonish an astronomer. Most astronomers, for example, are, I gather, pretty well agreed that the ingenious reasonings of Mr. Percival Lowell concerning the 'canals' on Mars were entirely invalidated by his failure constantly to remind himself that there was an observer implied during all his observations. This, however, is not the point with which I am here concerned. I have quoted the passage in order to make clear that it is entirely irrelevant to the objection to behaviorism which I have been setting forth. No one desires to prevent the behaviorist from "making observations upon what his subjects are doing"; what one insists upon is precisely that he shall not dogmatize about one of the subjects of his science, namely himself, without first observing what *that* subject is doing when it *is* observing—that he shall not set up a generalization covering, along with others, a given class of organisms (behavioristic psychologists and, by probable implication, others of the same animal species), which general-

¹ *British Jour. of Psychol.*, Oct., 1920, p. 94.

ization conflicts with the obvious and admitted facts about that particular class. The analogy of the other sciences clearly points to a conclusion precisely opposite to that which Watson seeks to justify. A physiologist, for example, uses a microscope in making his observations. It is doubtless not necessary that he should be constantly reflecting upon this fact, while the observations are in progress; yet he is at least so far mindful of it that he is prevented from asserting that no organism exists which is capable of improving its vision by artificial lenses. But it is to an assertion entirely parallel to this that the behaviorist is committed. Watson himself somewhere acknowledges that his generalization respecting the nature of 'thought' must include his own thought; "the behaviorist himself," he writes, "is only a complex of reacting systems, and *must be content to carry out his analysis with the same tools which he observes in his subjects.*" Yet he is, in reality, not for a moment content with this; he is, we have seen, manifestly engaged at every stage of his scientific activity in using tools of which he denies the existence, both in his subject and in himself.

The behaviorist, then, can avoid contradicting himself in this fashion only by abandoning his unbehavioristic pretensions to knowledge, by casting the notions of awareness of stimuli, of observation of objects, and of judgments about facts, into that stream which, as he has assured us, has already "sucked under" numerous kindred concepts. The idea of cognition, of any kind and by any knower, is wholly alien to the psychology of behaviorism. It is an understatement of the fact to say merely, as does one of the participants in the discussion at the Oxford Congress: "The crucial divergence from the current view lies in this, that Professor Watson holds it irrelevant to inquire whether, when an organism responds, the stimulus responded to is in its field of consciousness or not. It makes no difference from this point of view, whether the organism does or does not know what it is doing."

The inquiry is not, for the thorough-going behaviorist, simply irrelevant; it is answered with a definite negative. If perceiving and thinking are what Watson says they are, and nothing

more, no organism can ever know either what it is doing or what object evokes its response; and therefore no psychological investigator can possess such knowledge.¹ The only consistent behaviorist would be one who knew nothing whatever—who at no moment of his existence could do more than relax or contract his muscles, without being aware that he was doing so. And to maintain even a decent semblance of consistency the behaviorist should at least refrain from professing to know anything. Behaviorism, in short, belongs to that class of theories which become absurd as soon as they become articulate. The Paradox of the Thinking Behaviorist deserves to take its place in the logic-books beside that of Epimenides the Cretan, to which it is closely related.

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¹ A similar consequence, however, obviously follows even from the less extreme position mentioned. If the behaviorist merely refuses to assert that any organism is aware of objects or of its own activities, he must refuse to assert this of himself.